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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/781,786	02/20/2004	Mitsutoshi Higashi	300.1145	7152

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EXAMINER	
TSUKERMAN, LARISA Z	
ART UNIT	PAPER NUMBER
2833	

DATE MAILED: 10/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/781,786	HIGASHI, MITSUTOSHI	
	Examiner	Art Unit	
	Larisa Z Tsukerman	2833	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) 8 is/are allowed.

6)☒ Claim(s) 1-7 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Khandros et al. (6442831).

In regard to claim 1, Khandros et al. disclose a semiconductor device comprising:

a substrate body 212;

a plurality of external contact terminals 200 formed of springy wires, the external terminals arranged on and extending from the substrate body 212;

each of the external contact terminals 200 having a base end 216a connected to the substrate body 212 and a tip end 216b apart from the base end; and

each of the external contact terminals 200 being plated, at least, or the tip end thereof with multiple-layered films 220 (Au) and 218 (Ni) which are removable by an etching treatment.

Claims 4 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Chang et al. (6168974).

Chang et al. disclose a semiconductor device comprising:

a plurality of external contact terminals 270 formed of springy wires, the external terminals 210 arranged on and extending from the substrate body 274;

each of the external contact terminals having a base end (not marked, analog to 216a) connected to the substrate body 274 and a tip end apart from the base end (not marked, analog to 216b);

an **insulating resin** layer 272 (see claim 12) formed on the substrate body 274 in such a manner that at least a portion including the tip end is exposed from the insulating resin layer; and

each of the external contact terminals 270 being plated at least the exposed portion thereof with multiple films 282 and 284 which are removable by an etching treatment.

In regard to claim 7, Chang et al. disclose the insulating resin is an elastomeric material, such as silicone rubber.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Khandros et al. (6442831) in view of Lee et al. (6469386).

Khandros et al. disclose the springy wire 216 is formed of gold, and the multiple-layered films comprise a nickel 218 or nickel alloy film formed on the surface of the wire 216,

and a gold film 220, but lack **a palladium** film alternately formed thereon. Lee et al. teach a palladium and gold are alternately plated to form an outermost layer for better soldering. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made and for the same reason to include outermost layer of a palladium and gold as taught by Lee et al. in structure of Khandros et al.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Khandros et al. (6442831) and Lee et al. (6469386), as applied to claim 2 above, and further in view of Chua et al. (6439898)

Khandros et al. and Lee et al. disclose the springy wire 216 is formed of gold, and the multiple-layered films comprise a nickel or nickel alloy film 218 formed on the surface of the wire 216, and a gold film 220, but lack a **indium film** alternately formed thereon. Chua et al. teach an **alternative equivalent** method to cover a contact preferably with a conductive and preferably inert material such **as palladium or indium**. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include outermost layer of a palladium and indium as taught by Chua et al. in structure of Khandros et al.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (6168974) in view of Lee et al. (6469386).

Chang et al. disclose the springy wire 280 is formed of gold, and the multiple-layered films comprise a nickel 284 or nickel alloy film formed on the surface of the wire 280, and a gold film (not shown, see Col.19, line 47-490), but lack **a palladium** film alternately formed thereon. Lee et al. teach a palladium and gold are alternately plated

to form an outermost layer for better soldering. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made and for the same reason to include outermost layer of a palladium and gold as taught by Lee et al. in structure of Chang et al.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (61689747) and Lee et al. (6469386), as applied to claim 5 above, and further in view of Chua et al. (6439898)

Chang et al. and Lee et al. disclose the springy wire 280 is formed of gold, and the multiple-layered films comprise a nickel or nickel alloy film 284 formed on the surface of the wire 280, and a gold film (not shown, see Col.19, line 47-490), but lack a **indium film** alternately formed thereon. Chua et al. teach an **alternative equivalent** method to cover a contact preferably with a conductive and preferably inert material such **as palladium or indium**. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include outermost layer of a palladium and indium as taught by Chua et al. in structure of Chang et al.

Allowable Subject Matter

Claim 8 is allowed.

The following is an examiner's statement of reasons for allowance: The Prior Art does not teach or suggest a method comprising external contact terminals being plated with multiple films which are removable by an **etching treatment**; and when removing the

plated film by an etching treatment in accordance with a degree of contamination of the tip end rinsing this semiconductor device to reuse the same.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Larisa Z Tsukerman whose telephone number is (571)-272-2015. The examiner can normally be reached on Monday through Friday from 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula A Bradley can be reached on (571)-272-2800 ex. 33. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LT, 10/17/04

THO D. TA
PRIMARY EXAMINER